

WHAT IS CLAIMED IS:

1. A method of purging a semiconductor manufacturing apparatus, comprising:
  - a step of etching a CVD-deposited film deposited in a chamber constituting a semiconductor manufacturing apparatus which has performed a process of forming a CVD film using a CVD method over a semiconductor wafer, by using an etching gas containing at least a halogen gas; and
  - 10 a step of purging a cleaning gas remaining in the chamber by causing a gas containing hydrogen to flow into the chamber after the step of etching the CVD-deposited film by using the cleaning gas.
2. The method of purging a semiconductor manufacturing apparatus according to claim 1, wherein the gas containing the hydrogen in the step of purging is a mixed gas of hydrogen and nitrogen.
3. The method of purging a semiconductor manufacturing apparatus according to claim 2, wherein the content of the hydrogen of the mixed gas in the step of purging is in a range of approximately 10 sccm to approximately 10 slm, and the content of the nitrogen of the mixed gas is in a range of from 0 sccm to approximately 10 slm.
- 25 4. The method of purging a semiconductor manufacturing apparatus according to claim 1, wherein the cleaning gas in the step of etching is a ClF<sub>3</sub> gas.

5. A method of purging a semiconductor manufacturing apparatus, comprising:

a step of etching a CVD-deposited film deposited in a chamber constituting a semiconductor manufacturing apparatus which has performed a process of forming a CVD film using a CVD process over a semiconductor wafer, by using an etching gas containing at least a halogen gas; and

10 a step of purging a cleaning gas remaining in the chamber by causing a gas containing water-vapor to flow into the chamber after the step of etching the CVD-deposited film by using the cleaning gas.

15 6. The method of purging a semiconductor manufacturing apparatus according to claim 5, wherein the gas containing the water-vapor in the step of purging is a mixed gas of water-vapor and nitrogen.

20 7. The method of purging a semiconductor manufacturing apparatus according to claim 6, wherein the content of the water-vapor of the mixed gas in the step of purging is in a range of approximately 5 sccm to approximately 500 sccm, and the content of the nitrogen of the mixed gas is in a range of from 10 sccm to approximately 10 slm.

25 8. The method of purging a semiconductor manufacturing apparatus according to claim 5, wherein the cleaning gas in the step of etching is a ClF<sub>3</sub> gas.

9. A method of purging a semiconductor

manufacturing apparatus, comprising:

a step of etching a CVD-deposited film deposited  
in a chamber constituting a semiconductor manufacturing  
apparatus which has performed a process of forming a  
5 CVD film using a CVD process over a semiconductor  
wafer, by using an etching gas containing at least a  
halogen gas; and

10 a step of purging a cleaning gas remaining in the  
chamber by causing a gas containing a substance, which  
becomes alkali upon being dissolved in water, to flow  
into the chamber after the step of etching the CVD-  
deposited film by using the cleaning gas after the step  
of etching the CVD-deposited film by using the cleaning  
gas.

15 10. The method of purging a semiconductor  
manufacturing apparatus according to claim 9, wherein  
the gas containing the substance that becomes alkali  
upon being dissolved in water in the step of purging is  
a mixed gas of substance that becomes alkali upon being  
dissolved in water and nitrogen.

20 11. The method of purging a semiconductor  
manufacturing apparatus according to claim 9, wherein  
the cleaning gas in the step of etching is a  $\text{ClF}_3$  gas.

25 12. A method of purging a semiconductor  
manufacturing apparatus, comprising:

a step of etching a CVD-deposited film deposited  
in a chamber constituting a semiconductor manufacturing

apparatus which has performed a process of forming a CVD film using a CVD process over a semiconductor wafer, by using an etching gas containing at least a halogen gas; and

5 a step of purging a cleaning gas remaining in the chamber by causing ammonia to flow into the chamber after the step of etching the CVD-deposited film by using the cleaning gas.

10 13. The method of purging a semiconductor manufacturing apparatus according to claim 12, wherein the ammonia in the step of purging is a mixed gas of ammonia and nitrogen.

15 14. The method of purging a semiconductor manufacturing apparatus according to claim 13, wherein the content of the ammonia in the step of purging is in a range of approximately 100 sccm to approximately 2 slm, and the content of the nitrogen of the mixed gas is in a range of from 10 sccm to approximately 10 slm.

20 15. The method of purging a semiconductor manufacturing apparatus according to claim 12, wherein the cleaning gas in the step of etching is a  $\text{ClF}_3$  gas.

25 16. The method of purging a semiconductor manufacturing apparatus according to claim 12, wherein the temperature in the chamber when ammonia is caused to flow into the chamber is approximately 800°C or higher.

17. A method of manufacturing a semiconductor

device comprising:

a step of mounting a semiconductor wafer in a chamber purged using the method of purging a semiconductor manufacturing apparatus according to any one of claims 1 to 4; and

5 a step of forming a CVD film over the semiconductor wafer mounted in the chamber.

18. A method of manufacturing a semiconductor device comprising:

10 a step of mounting a semiconductor wafer in a chamber purged using the method of purging a semiconductor manufacturing apparatus according to any one of claims 5 to 8; and

15 a step of forming a CVD film over the semiconductor wafer mounted in the chamber.

19. A method of manufacturing a semiconductor device comprising:

20 a step of mounting a semiconductor wafer in a chamber purged using the method of purging a semiconductor manufacturing apparatus according to any one of claims 9 to 11; and

a step of forming a CVD film over the semiconductor wafer mounted in the chamber.

25 20. A method of manufacturing a semiconductor device comprising:

a step of mounting a semiconductor wafer in a chamber purged using the method of purging a

semiconductor manufacturing apparatus according to any one of claims 12 to 16; and

a step of forming a CVD film over the semiconductor wafer mounted in the chamber.